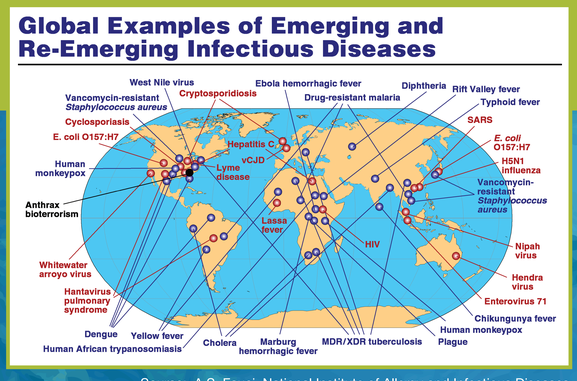
# Human Health and Biodiversity:

## Making the Connection

### Monitoring Emergent Disease and Links to Land Use




Source: A.S. Fauci, National Institute of Allergy and Infectious Diseases

For centuries people tapped into a range of "ecosystem services," including clean air and water, food and fuel. Landscapes and natural systems were altered with seemingly few consequences. But today we know the consequences can be severe.

Entire ecosystems are at risk. Biodiversity loss is accelerating. In addition to pollution, increased erosion, and flooding, studies strongly suggest that the emergence and reemergence of disease is another consequence of land use.

As highlighted in the recent Global Environment Outlook 4, the United Nations recognizes the fundamental links between biodiversity conservation and health and well-being. However, decision- makers lack the tools to better understand how the changes we make to the environment can affect human health. A better understanding of the ways in which environmental factors and human behaviors contribute to the spread of infectious diseases will lead to better decisions about reducing and, perhaps, preventing disease.

For this reason, the U.S. Environmental Protection Agency is introducing an interdisciplinary program to better understand the scientific relationship between human stressors, changes in biodiversity and disease transmission to humans. Encouraging the coordination of earth observations with experimental field data, this program is one of the few international programs bringing together ecologists, health scientists, social scientists and earth scientists. Built on multi-disciplinary collaboration, the goal is to achieve better and faster uses of new knowledge to produce the dual benefits of reducing disease and protecting the environment.

Through this new program, Earth scientists can help explain animal and vector population density related to land cover features through the use of real-time earth observations. Ecologists can help describe environmental factors affecting animal hosts and vectors of disease. Epidemiologists can contribute knowledge on disease life cycles and how diseases spread to and among people. Social scientists can identify human behaviors that affect biodiversity and health and strategies to encourage behaviors that will protect both health and the environment. Economists can put a monetary value on biodiversity as it relates to disease reduction.

**http://es.epa.gov/ncer/biodiversity/**